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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/738,319	12/18/2000	Salah Ait-Mokhtar	D/A0466	2262

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EXAMINER

HARPER, V PAUL

ART UNIT	PAPER NUMBER
2654	S

DATE MAILED: 07/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/738,319	AIT-MOKHTAR ET AL.	
	Examiner	Art Unit	
	V. Paul Harper	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 6/23/03.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-8 and 10-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-8 and 10-20 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. _____.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Claim Objections

1. All relevant claim objections are withdrawn as being satisfied.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-8, 10-18, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Liddy et al. (US Patent 6,006,221), hereinafter referred to as Liddy.

Regarding claims 1 and 15, Liddy discloses a multilingual document retrieval method. The steps taught by Liddy include the following: entering a query or document ^{ITEMS} for processing (Figs. 1 and 2, col. 2, Ins. 42-65), which corresponds to "(a) receiving the input strings"; subjecting each document to a sequence of processing steps where one of the initial steps includes part of speech tagging (col. 2, Ins. 55-60, col. 7, Ins. 21-46), which corresponds to "(b) linguistically analyzing the input strings to generate a first representation of each of the input strings; each of the first representations including linguistic information;" generating both conceptual and term-

based alternative representations of the documents and queries with relevant information extracted from the documents and indexed (col. 6, Ins. 15-20, Figs. 1 and 2, col. 6, ln. 63 through col. 7, ln. 5), which corresponds to “(c) skeletising each of the first representations to generate a corresponding second representation for each of the input strings; said skeletising step replacing the linguistic information with abstract variables in each of the second representations”; and storing the processed documents in a database (col. 6, Ins. 25-32, Fig. 1 ¹⁶⁰₆₀), which corresponds to “(d) storing the second representation as normalized representations of the input strings.”

Regarding claim 2, Liddy teaches everything claimed, as applied above (see claim 1). In addition, Liddy teaches that multiple processing steps are performed including part of speech tagging and proper noun categorization (Fig. 2, col. 7, Ins. 21-46), which corresponds to “said step of linguistically analyzing comprises performing a plurality of operating functions.”

Regarding claim 3, Liddy teaches everything claimed, as applied above (see claim 2). In addition, Liddy teaches that the processing steps include part of speech tagging, finding root forms, and concept tagging (col. 9, Ins. 7-18, col. 10, Ins. 26-40, col. 11, Ins. 6-16, and Ins. 34-53), which corresponds to “performing one of morphological analysis, syntactic analysis, and semantic analysis.”

Regarding claim 4, Liddy teaches everything claimed, as applied above (see claim 3); in addition, Liddy teaches the finding of the root forms of the words (col. 11, Ins. 6-8), which corresponds to “normalizing words according to their base forms.”

Regarding claim 5, Liddy teaches everything claimed, as applied above (see claim 3); in addition, Liddy teaches the use of a part of speech tagger that identifies words as nouns, verbs, etc. (col. 9, Ins. 11-18), which corresponds to “extracting a syntactic category for individual words.”

Regarding claim 6, Liddy teaches everything claimed, as applied above (see claim 3); in addition, teaches the use of a preprocessor that performs discourse level tagging (col. 8, Ins. 41-53) and processing modules that tag words and phrases (col. 10, Ins. 53-63) in addition to part of speech tagging (col. 9, Ins. 11-18), which corresponds to “extracting syntactic information representing string structure.”

Regarding claim 7, Liddy teaches everything claimed, as applied above (see claim 3). In addition, Liddy teaches further processing to disambiguate concept group assignments using a tree structure to represent portions of the text and indicate relations between words (col. 16, In. 42 through col. 18, In. 30, in particular col. 17, Ins. 22-39, Fig. 7), which corresponds to “extracting dependency relations between sub-structures of a string.”

Regarding claim 8, Liddy teaches everything claimed, as applied above (see claim 3); in addition, Liddy teaches the use of concept groups (col. 9, In. 7 through col. 12, In. 10) and considers polysemous words having multiple concept-category tags linking individual words to a single multilingual concept group (col. 11, Ins. 35-55), which corresponds to “providing semantic links for individual words.”

Regarding claim 10, Liddy teaches everything claimed, as applied above (see claim 1); in addition, Liddy teaches the use of conceptual and term-based

representations including the use of part of speech tagging (col. 6, Ins. 15-20, col. 9, Ins. 7-19), which corresponds to “the abstract variables are tags indicating the replaced linguistic information.”

Regarding claim 11, Liddy teaches everything claimed, as applied above (see claim 1); in addition, Liddy teaches that the process documents are stored in a database (col. 6, Ins. 25-32, Ins. 62-67, Fig. 1, ^{LEM}₁₆₀), which corresponds to “the normalized representations are stored in a database.”

Regarding claim 12, Liddy teaches everything claimed, as applied above (see claim 11). In addition, Liddy teaches the following steps: accepting a query (Fig. 1, ^{LEM}₁₇₀, col. 2, Ins. 42-54), which corresponds to “receiving a query”; processing the query (col. 7, Ins. 20-46, and also see rejection of claim 1, above), which corresponds to “generating a normalized representation of said query by performing steps (b) and (c)”; matching the processed query to a processed document (Fig. 1, ^{LEM}₁₅₅, col. 7, Ins. 20-46, col. 18, §7.0, “Matching Documents to Queries”), which corresponds to “matching the normalized representation of said query to the normalized representations stored in the database”; and outputting the results of the query match (Fig. 1, ^{LEM}₁₇₀, col. 20, §8.2 “Graphical User Interface (GUI)”), which corresponds to “retrieving from said database strings identified by said matching step.”

Regarding claim 13, Liddy teaches everything claimed, as applied above (see claim 1). In addition, Liddy teaches that the processing of queries or documents into language independent representations where the languages supported include English, French, German, etc. (col. 2, ln. 42 through col. 3, ln. 33), which corresponds to “said

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steps (a) - (d) are performed to generate a translation memory comprising a plurality of normalized representations of strings in a first language and a second language."

Regarding claim 14, Liddy teaches everything claimed, as applied above (see claim 13). In addition, Liddy teaches the following steps: receiving a query and determining the language of the query (Fig. 2, ¹⁰¹₁₁₀ 120), which corresponds to "receiving an input string in the first language"; matching the conceptual representation of the string to representations in the database documents that match and retrieving text that matches (col. 2, ln. 65 through col. 3, ln. 33, col. 4, lns. 6-10), which corresponds to "retrieving a similar string in said first language from said plurality of normalized representations"; the system can also perform a gloss transliteration (col. 3, lns. 7-14) or a machine translation (col. 22, lns. 30-38), which corresponds to "outputting said translation information based on a string in said second language which corresponds to said retrieved string in said first language."

Regarding claim 16, Liddy teaches everything claimed, as applied above (see claim 15); in addition, the claim limitations correspond to some of those given in claim 12 and are rejected for the same reasons given above.

Regarding claim 17, Liddy teaches everything claimed, as applied above (see claim 16); in addition, the claim limitations correspond to some of those given in claim 12 and are rejected for the same reasons given above.

Regarding claim 18, Liddy teaches everything claimed, as applied above (see claim 16). In addition, Liddy teaches that the conceptualized (translated) documents are stored in a database (col. 2, lns. 43-65, Fig. 1, ¹⁰¹₁₁₀ 60) and that for documents that

contain industry-specific terminology, associated multilingual objects may be stored (col. 22, lns. 49-54), which corresponds to “a translation memory for storing translations of the input strings.”

Regarding claim 20, Liddy teaches everything claimed, as applied above (see claim 2). In addition, Liddy teaches that a sequence of processing modules are executed (to generate the language independent representation) (col. 7, ln. 21 through col. 8, ln. 40, Fig. 2) where these modules are inherently stored in the system, which corresponds to “storing further comprises storing the operating functions performed on the normalized representations.”

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liddy in view of Collins (“Discriminative Reranking for Natural Language Parsing,” *Proc. 17th International Conf. on Machine Learning*, July 2000).

Regarding claim 19, Liddy teaches everything claimed, as applied above (see claim 2), but Liddy does not specifically teach “performing machine learning for selecting particular operating functions out of said plurality of operating functions and for

determining the processing order." However, the examiner contends that this concept was well known in the art, as taught by Collins.

In the same field of endeavor, Collins teaches the machine learning technique of discriminative reranking for natural language parsing where reranking techniques can be applied to problems in natural language processing to improve the resulting representations (§1 "Introduction").

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Liddy by specifically providing reranking techniques, as taught by Collins, for the purpose of improving the resulting representation.

Response to Arguments

4. Applicant's arguments filed on 6/23/03 have been fully considered but they are not persuasive.

5. Applicant asserts on page 6:

While Liddy linguistically analyzes input strings to generate first representations (of those strings) which include linguistic information, Liddy does not perform skeletising each of the first representations to generate a corresponding second representation for each of the input strings, *the skeletising step replacing the linguistic information with abstract variables in each of the second representations, as recited in claim 1*. In Liddy, the "analogous processing" mentioned in col. 6, lines 15-20 is said to be "to determine the requirements for document matching." The alternative representations of the documents and queries are said to be both conceptual and term based - see lines 19 and 20 of col. 6 of Liddy.

However, Liddy never performs further processing that obtains second representations obtained by replacing the linguistic information obtained by the initial processing with abstract variables. Nor does Liddy provide a system to do so. (Italics added)

The examiner contends that Liddy does perform an additional step of replacing linguistic information with an abstract variable during the use of conceptual representations as illustrated in Figure 5. Here a word is first disambiguated and then represented (i.e., replaced) with disambiguated concept codes (col. 15, ln. 63 through col. 16, ln. 10).

6. Applicant asserts beginning on page 8:

Furthermore, Collins is cited to render obvious "performing machine learning for selecting particular operating functions out of said plurality of operating functions and for determining the processing order." Collins is said to teach the machine language technique of discriminative re-ranking for natural language parsing where re-ranking techniques can be applied to problems in natural language processing to improve the resulting representations.

The alleged motivation to combine these references is "for the purpose of improving the resulting representation."

Applicants respectfully submit that the Office Action has not made out a *prima facie* case of obviousness for the reasons stated above concerning the shortcomings of Liddy, and because the *Office Action fails to provide proper motivation to combine these references as alleged.* (Italics added)

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the

references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Collins teaches the application of machine learning techniques to natural language parsing and gives a motivation in terms of an improved representation that results improved recall and precision, and decreased error (§1, last paragraph).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any response to this office action should be mailed to:

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Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314

Hand-delivered responses should be brought to:

Crystal Park II
2121 Crystal Drive
Arlington, VA.
Sixth Floor (Receptionist)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. V. Paul Harper whose telephone number is (703) 305-4197. The examiner can normally be reached on Monday through Friday from 8:00 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil, can be reached on (703) 305-9645. The fax phone number for the Technology Center 2600 is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service office whose telephone number is (703) 306-0377.

Vijay Chawan
7/12/03

VPH/vph
July 8, 2003

VIJAY CHAWAN
PRIMARY EXAMINER